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PATENT APPLICATION  
ATTORNEY DOCKET NO. 200205843-6

**IN THE  
UNITED STATES PATENT AND TRADEMARK OFFICE**

Inventor(s): **Mohammad M. Samii**  
Application No.: **10/634,424**  
Filing Date: **August 5, 2003**

Confirmation No.:  
Examiner: **Lam S. Nguyen**  
Group Art Unit: **2853**

**Title: PHOTOSENSOR ACTIVATION OF AN EJECTION ELEMENT OF A FLUID-EJECTION DEVICE**

**Mail Stop Appeal Brief - Patents  
Commissioner For Patents  
PO Box 1450  
Alexandria, VA 22313-1450**

**TRANSMITTAL OF REPLY BRIEF**

Transmitted herewith is the Reply Brief with respect to the Examiner's Answer mailed on October 19, 2006.

This Reply Brief is being filed pursuant to 37 CFR 1.193(b) within two months of the date of the Examiner's Answer.

(Note: Extensions of time are not allowed under 37 CFR 1.136(a))

(Note: Failure to file a Reply Brief will result in dismissal of the Appeal as to the claims made subject to an expressly stated new ground rejection.)

No fee is required for filing of this Reply Brief.

If any fees are required please charge Deposit Account 08-2025.

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Typed Name: **Jeff A. Holmen**

Signature: **Jeff A. Holmen**

Respectfully submitted,

**Mohammad M. Samii**

By

**Jeff A. Holmen**

Attorney/Agent for Applicant(s)

Reg No.: **38,492**

Date : **DECEMBER 14, 2006**

Telephone : **(612) 573-0178**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicant: Mohammad M. Samii                      Examiner: Lam S. Nguyen  
Serial No. 10/634,424                              Group Art Unit: 2853  
Filed: August 5, 2003                              Docket No.: 200205843-6 / H301.272.102  
Due Date: December 19, 2006  
Title: PHOTODIODE ACTIVATED EJECTION ELEMENT OF A  
      FLUID-EJECTION DEVICE

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**REPLY BRIEF TO EXAMINER'S ANSWER**

Mail Stop Appeal Brief – Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

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Dear Sir/Madam:

This Reply Brief is presented in response to the Examiner's Answer mailed October 19, 2006, and in support of the Notice of Appeal filed April 26, 2006 and the Appeal Brief filed June 30, 2006, appealing the rejection of claims 1-14 and 23 of the above-identified application as set forth in the Final Office Action mailed February 1, 2006.

At any time during the pendency of this application, please charge any fees required or credit any overpayment due to Deposit Account No. 08-2025 pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees required to Deposit Account No. 08-2025 under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Appellant respectfully requests reconsideration and reversal of the Examiner's rejection of pending claims 1-14 and 23.

**Reply Brief to Examiner's Answer**  
 Applicant: Mohammad M. Samii  
 Serial No.: 10/634,424  
 Filed: August 5, 2003  
 Docket No.: 200205843-6  
 Title: PHOTODRIVE ACTIVATION OF AN EJECTION ELEMENT OF A FLUID-EJECTION DEVICE

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## ARGUMENT

### I. Reply to Examiner's Grounds of Rejection

With respect to independent claims 1 and 23, the Examiner stated the following:

Maru et al. discloses a printing apparatus having a printhead assembly comprising:

a plurality of thermal inkjet printing elements (FIG. 11, element 101), each of the printing elements configured to cause forming image when the printing element is activated;

a plurality of latches (FIG. 11, element 104); and

a plurality of image data receiving units (FIG. 11: *The shift register 105 includes a plurality of S/R cells for receiving and storing image data from the data input 201*) each is coupled to one of the printing elements via one of the latches and a multi-transistor amplifier (FIG. 11: *Each S/R cell is coupled to an associated printing element 101 through an associated latch 104 and an associated dual-transistor amplifier 102*) (Referring to claims 4, 23), each configured to generate an activation signal that causes the printing element to be activated when the image data, transmitted from an external device through a wiring connection, is received.

Maru et al., however, does not disclose wherein the plurality of image data receiving units is a plurality of junction photosensors/photodiodes/phototransistors (Referring to claims 2-3), each configured to generate an activation signal that causes an associated printing element to be activated when the photosensor is illuminated by a light source and positioned substantially adjacent to the printing element that it is coupled to (Referring to claim 14). In other words, Maru et al. does not disclose wherein the printhead assembly is in communication with the external device through an optical connection. (Examiner's Answer at pages 3-4) (underlining emphasis added)

The underlined words in the above block quote are not recited in the claims of the present application. The Examiner's analysis ignores words used in claims 1 and 23, which is improper under established precedent. "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Independent claims 1 and 23 do not recite "a plurality of image data receiving units". Independent claims 1 and 23 do not recite "wherein the plurality of image data receiving units is a plurality of junction photosensors". Independent claims 1 and 23 do not recite "wherein the printhead assembly is in communication with the external device through an optical connection".

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Rather, independent claim 1 recites "a plurality of latches; and a plurality of junction photosensors, each junction photosensor coupled to one of the ejection elements via one of the latches". Maru does not teach or suggest the limitation "each junction photosensor coupled to one of the ejection elements via one of the latches", as recited in independent claim 1. Fujii also does not teach or suggest this limitation. The Examiner has not cited any reference that teaches or suggests a printhead assembly with a junction photosensor coupled to an ejection element via a latch as recited in independent claim 1. Maru and Fujii, either alone or in combination, do not teach or suggest each and every limitation of independent claim 1.

Independent claim 23 recites "a junction photosensor coupled to the ejection element via a latch and a multi-transistor amplifier". Maru does not teach or suggest a junction photosensor coupled to an ejection element via a latch and a multi-transistor amplifier, as recited in independent claim 23. Fujii also does not teach or suggest this limitation. Thus, Maru and Fujii, either alone or in combination, do not teach or suggest each and every limitation of independent claim 23.

In view of the above, independent claims 1 and 23 are not taught or suggested by the cited prior art, either alone, or in combination. Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness of claim 1 or claim 23, and the rejection of claims 1 and 23 under 35 U.S.C. § 103(a) should be withdrawn. Dependent claims 2-14 further limit patentably distinct claim 1, and are believed to be allowable over the cited prior art. Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness of claims 2-14, and the rejection of claims 2-14 under 35 U.S.C. § 103(a) should be withdrawn.

**II. Reply to Examiner's Response to Arguments**

In the Response to Argument section of the Examiner's Answer, the Examiner stated the following:

The Appellant argued that there was no suggestion in this case to combine Maru and Fujii in a manner that would produce the claimed invention, no teaching or suggestion in Maru that it would be advantageous or desirable to replace the shift register 105 disclosed therein with photodiodes, such as the photodiodes D disclosed in Fujii, and no teaching or suggestion in

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Fujii that it would be advantageous or desirable to replace a shift register with the photodiodes D disclosed therein. The Examiner, in response, cites that "*a suggestion/motivation need not be expressly stated in one or all of the references used to show obviousness, but can be from common knowledge and common sense of a person of ordinary skill in the art without any specific hint or suggestion in a particular reference*" (*In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969)). In this case, the motivation of replacing Maru's shift register with Fuji's photodiodes to be able to wirelessly communicate between the printhead assembly and the printing apparatus rather than wiring communication has been held well known in the art to avoid many problems due to wiring connection such as wiring disconnection (between a moving printhead assembly and a stationary printing apparatus), short circuit between the conductor wiring, signal attenuation (due to resistance of the wiring), and to eliminate interference noises generated by the electrical wiring. (Examiner's Answer at pages 7-8) (emphasis in original).

The Federal Circuit has stated the following about the *In re Bozek* case cited by the Examiner in the above block quote:

The case on which the Board relies for its departure from precedent, *In re Bozek*, 416 F.2d 1385, 163 USPQ 545 (CCPA 1969), indeed mentions "common knowledge and common sense," the CCPA stating that the phrase was used by the Solicitor to support the Board's conclusion of obviousness based on evidence in the prior art. *Bozek* did not hold that common knowledge and common sense are a substitute for evidence, but only that they may be applied to analysis of the evidence. *Bozek* did not hold that objective analysis, proper authority, and reasoned findings can be omitted from Board decisions. Nor does *Bozek*, after thirty-two years of isolation, outweigh the dozens of rulings of the Federal Circuit and the Court of Customs and Patent Appeals that determination of patentability must be based on evidence. This court has remarked, in *Smiths Industries Medical Systems, Inc. v. Vital Signs, Inc.*, 183 F.3d 1347, 1356, 51 USPQ2d 1415, 1421 (Fed. Cir. 1999), that *Bozek*'s reference to common knowledge "does not in and of itself make it so" absent evidence of such knowledge.

*In Re Lee*, 277 F.3d 1338, 1345, 61 USPQ2d 1430, 1435 (Fed. Cir. 2002).

Thus, as indicated by the Federal Circuit in the *In Re Lee* case, *Bozek* did not hold that common knowledge and common sense are a substitute for evidence, but only that they may be applied to the analysis of the evidence. The Examiner indicated that it would have been obvious to modify the printhead assembly disclosed in Maru by replacing the shift register 105 (Maru at Figure 11) with the photodiodes D (Fujii at Figure 2) disclosed in Fujii. (See, e.g., Examiner's Answer at pages 4, and 8-11). However, the Examiner has not provided any

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evidence to support the assertion that it would have been obvious to replace shift registers with photodiodes. The Examiner has not provided any evidence that shift registers and photodiodes are known equivalents, or that it is known in the art that shift registers and photodiodes are interchangeable. The Examiner has only provided generalized opinions regarding the benefits of optical communications versus wired communications. Rejections must be supported by substantial evidence in the record, not unsupported speculation. *See, e.g., In re Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002), and *In re Zurko*, 111 F.3d 887, 42 USPQ2d 1476 (Fed. Cir. 1997).

In the Response to Argument section of the Examiner's Answer, the Examiner apparently recognized the lack of any evidence to support the obviousness analysis, and cited three new references -- Klaus et al, U.S. Patent No. 5,396,078 ("Klaus"), Chiu, U.S. Patent No. 5,567,063 ("Chiu"), and Kless, U.S. Patent No. 6,357,859 ("Kless"). (Examiner's Answer at pages 8-9). Like the Maru and Fujii references, there is no disclosure in Klaus, Chiu, or Kless, that teaches or suggests the limitation "each junction photosensor coupled to one of the ejection elements via one of the latches", as recited in independent claim 1, or the limitation "a junction photosensor coupled to the ejection element via a latch and a multi-transistor amplifier", as recited in independent claim 23. There is also no disclosure in these new references that teaches or suggests replacing shift registers with photodiodes.

The Examiner appears to be improperly relying on hindsight using Appellant's own teachings to make a very specific change to Maru (i.e., replacing shift registers with photodiodes) in an attempt to meet the claim language, and then relying on very general statements about the benefits of optical communications to support this proposed modification. However, there are numerous references that discuss the advantages of wired communications over optical communications, and the generalized statements relied on by the Examiner do not teach or suggest the specific modification proposed by the Examiner.

In the Response to Argument section of the Examiner's Answer, the Examiner stated the following:

The Appellant, in addition, asserted that the combination would change the principle of operation of the prior art. The examiner disagrees with the applicant's assertion because one of ordinary skill in the art would know that in order to replace a wiring connection by a wireless connection such as optical communication, optical receivers such as photosensors are needed for

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converting optical signal to electrical signal. This modification does not change the principle of operation of the printhead that converts electrical signals representing image data to printed images on a printing medium, the modification in fact just changes means for transmitting and receiving image data. (Examiner's Answer at page 8).

The Examiner's analysis ignores the manner in which the print head disclosed in Maru operates. As shown in Figure 11 of Maru, the disclosed print head includes a shift register 105 for storing serially inputted print data. (Maru at col. 1, lines 27-29). The number of data bits stored in the shift register 105 is the same as the number of transducers 101. (Maru at col. 1, lines 34-36). The data is clocked into the shift register 105 via a data input terminal 201 and a transfer-clock input terminal 202. (Maru at col. 1, lines 40-44). The data output by the shift register 105 goes through latches 104 to time-divisional logical circuit 103, which time divisionally controls power-supply to the transistors 102 so as to time-divisionally heat the transducers 101. (Maru at col. 1, lines 21-26). First, it should be pointed out that replacing the shift register 105 with a photodiode, as proposed by the Examiner, would appear to render inoperable the print head disclosed in Maru. A photosensor would not be able to receive a clocked data signal on terminals 201 and 202, and perform the shifting operation disclosed in Maru. Second, the modification proposed by the Examiner would drastically change the manner in which the print head disclosed in Maru operates (e.g., it would apparently no longer receive a clocked data signal on terminals 201 and 202, no longer perform a bit-shifting operation, possibly no longer time divisionally control power-supply to the transducers 101), and require a major reconstruction of the print head itself, as well as the entire printer LRA (Figure 1).

In view of the above, independent claims 1 and 23 are not taught or suggested by the cited prior art, either alone, or in combination. Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness of claim 1 or claim 23, and the rejection of claims 1 and 23 under 35 U.S.C. § 103(a) should be withdrawn. Dependent claims 2-14 further limit patentably distinct claim 1, and are believed to be allowable over the cited prior art. Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness of claims 2-14, and the rejection of claims 2-14 under 35 U.S.C. § 103(a) should be withdrawn.

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CONCLUSION

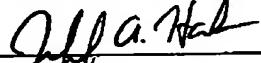
For the above reasons, Appellant respectfully submits that the art of record neither anticipates nor renders obvious the claimed invention. Thus, the claimed invention does patentably distinguish over the art of record. Appellant, therefore, respectfully submits that the above rejections are not correct and should be withdrawn, and respectfully requests that the Examiner be reversed and that all pending claims be allowed.

Any inquiry regarding this Reply Brief should be directed to Donald J. Coulman at Telephone: (541) 715-1694 Facsimile: (541) 715-8581 or Jeff A. Holmen at Telephone No. (612) 573-0178, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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 Legal Department, M/S 35  
 HEWLETT-PACKARD COMPANY  
 P.O. Box 272400  
 Fort Collins, Colorado 80527-2400

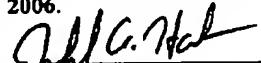
Respectfully submitted,  
 Mohammad M. Samii,  
 By his attorneys,  
 DICKE, BILLIG & CZAJA, PLLC  
 Fifth Street Towers, Suite 2250  
 100 South Fifth Street  
 Minneapolis, MN 55402  
 Telephone: (612) 573-0178  
 Facsimile: (612) 573-2005

Date: 12/14/06  
 JAH:jmc

  
 Jeff A. Holmen  
 Reg. No. 38,492

CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being transmitted via facsimile to Facsimile No. (571) 273-8300 on this 14<sup>th</sup> day of December, 2006.

By:   
 Name: Jeff A. Holmen